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EXAMINER	
JUNTIMA, NITTAYA	
ART UNIT	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/030,286	KORPELA ET AL.	
	Examiner	Art Unit	
	NITTAYA JUNTIMA	2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2/12/09*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14 and 16-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *18-20* is/are allowed.

6)☒ Claim(s) *1,6-8,10-14,16,17 and 21* is/are rejected.

7)☒ Claim(s) *2-5 and 9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to the Amendment filed on 2/12/2009.

2. **Claims 1-14 and 16-21** are pending (claim 15 was canceled).

3. **Claims 18-20** are allowed.

4. **Claims 2, 3, 4, 5, and 9** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim Rejections - 35 USC § 112

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 17 and 21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Although the specification discloses the functions as recited in claims 17 and 21, the specification does not disclose a computer program product comprising a computer useable medium having computer readable codes for the functions as claimed. Note that even though a computer program product per se is well known in the art or obvious, it does not mean that the inventor had procession of the subject matter, i.e., a computer program product comprising a

computer useable medium having computer readable code embodied therein, at the time of the filing of the application or the claimed subject matter is inherently included. In addition, since a computer readable medium is not defined any where in the specification, one cannot tell what the computer readable medium is and it could be any form of memory or storage, or carrier wave. Therefore, it is submitted that the claimed computer program product comprising a computer useable medium having computer readable code embodied therein is a new matter and not supported by the specification.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. **Claims 1, 6, 7, 8, 10, 11, 12, 13, 14, and 16** are rejected under 35 U.S.C. 102(e) as being anticipated by Hosur (US 6,977,910 B1).

Regarding **claim 1**, as shown in Fig. 2, Hosur teaches a method comprising:

Constructing a frame of a certain number of consecutive symbols (a frame of 16 time slots is constructed of four pilot symbols 11, S1, 11, and S2, col. 4, lines 41-48).

Transmitting the symbols belonging to a sequence of symbols (four pilot symbols 11, S1, 11, and S2, col. 4, lines 41-48) using at least two antennas (antenna 1 and antenna 2, col. 4, lines 41-64).

Wherein the transmission of each symbol of the sequence of symbols is with a certain transmission pattern (pattern shown in TABLE 1) that indicates through which transmission antenna each transmitted symbol is transmitted (col. 4, lines 41-64 and col. 5, lines 7-26).

Starting the transmission of the sequence of symbols from a predefined antenna (pilot symbol 11 is transmitted on antenna 1, col. 4, lines 49-63).

Enabling a receiver to associate a correct transmission antenna specific channel coefficient with each transmitted symbol by starting the transmission pattern from the beginning in the beginning of each frame (as shown in equations [5]-[10], α_j^1 and α_j^2 are associated with the received signals R_j^1 - R_j^4 comprising the corresponding symbols transmitted from associated antennas 1 and 2 transmitted from the beginning of each frame, i.e., time slot 1 as shown in a pattern of TABLE 1, col. 3, lines 2-65; see also col. 4, lines 35-37).

Regarding **claims 6, 7, and 8**, Hosur teaches that each frame comprises of a certain number of consecutive time slots (time slots 1-16) and each time slot consists of a certain number of consecutive symbols, and said method further comprises transmitting “one/at least one/at least in one of the time slots at least one" symbol belonging to the sequence of symbol in each time slot (see TABLE 1, col. 5, lines 7-26).

Regarding **claim 10**, Hosur teaches starting the transmission of the sequence of symbols from the primary antenna (antenna 1) that transmits a common pilot signal, see TABLE 1 and col. 4, lines 45-64.

Regarding **claim 11**, Hosur teaches that the sequence of symbols is transmitted in downlink direction in a cellular network (a WCDMA system, col. 1 lines 33-38, col. 3, lines 14-22, and col. 4, lines 38-48).

Claim 12 is an apparatus (transmitter) claim corresponding to method claim 1, and is rejected under the same reason set forth in the rejection of claim 1 with the addition of a controller (a controller must be included in order to control the transmitter to transmit a sequence of symbols 11, S1, 11, and S2 in a transmission pattern shown in TABLE 1, col. 4, lines 38-64 and col. 5, lines 7-26), an indicator (an indicator must be included to indicate antenna 1 to transmit the first symbol belonging to the sequence, col. 4, lines 61-63), a starter (a starter must be included to make the transmitter start the transmission pattern from the beginning in the beginning of a frame, col. 4, lines 35-64 and col. 5, lines 7-26).

Claim 13 is a network element (transmitter) claim corresponding to method claim 1, and is rejected under the same reason set forth in the rejection of claim 1 with the addition of a controller (a controller must be included in order to control the transmitter to transmit a sequence of symbols 11, S1, 11, and S2 in a transmission pattern shown in TABLE 1, col. 4, lines 38-64 and col. 5, lines 7-26), an indicator (an indicator must be included to indicate antenna 1 to transmit the first symbol belonging to the sequence, col. 4, lines 61-63), a starter (a starter

must be included to make the transmitter start the transmission pattern from the beginning in the beginning of a frame, col. 4, lines 35-64 and col. 5, lines 7-26).

Regarding **claims 14 and 16**, Hosur teaches that the network element (transmitter) is a radio network controller/a base station of a spread spectrum system (a radio network controller/a base station reads on the transmitter that transmits pilot symbols to any receivers within range within a WCDMA system, col. 1 lines 33-38, col. 3, lines 14-22, and col. 4, lines 38-48).

8. **Claim 17** is rejected under 35 U.S.C. 103(a) as being unpatentable over Hosur (US 6,977,910 B1).

Claim 17 is a computer program product claim having functions corresponding to method claim 1 with an exception that Hosur does not explicitly teach a computer usable medium having computer readable codes embodied therein for causing a computer to activate functions of a device. However, it would have been obvious to one skilled in the art at the time of the invention to include a computer usable medium having computer readable codes embodied therein for causing a computer to activate functions of a device, such as transmitter of Hosur, into the computer program product as recited in the claim such that the computer readable codes can be portable and conveniently installed on other transmitters.

Response to Arguments

9. Applicant's arguments filed 2/12/2009 have been fully considered but they are not persuasive.

A. In the Remarks on page 11 regarding claims 17 and 21, the applicant argues that the computer program products per se are common and well known, therefore, a person skilled in the art would be able to make and use the claimed product by combining the prior art with the present invention.

In response, the examiner respectfully disagrees. Note that even though a computer program product per se is well known in the art or obvious, it does not mean that the inventor had procession of the subject matter, i.e., a computer program product comprising a computer useable medium having computer readable code embodied therein, at the time of the filing of the application or the claimed subject matter is inherently included. In addition, since a computer readable medium is not defined any where in the specification, one cannot tell what the computer readable medium is and it could be any form of memory or storage, or carrier wave. Therefore, it is submitted that the claimed computer program product comprising a computer useable medium having computer readable code embodied therein is a new matter and not supported by the specification. Thus, the rejection is maintained.

B. In the Remarks on pages 12-16 regarding claim 1, the applicant argues that Hosur does not teach (a) starting the transmission of the sequence of symbols from a predefined antenna and (b) enabling a receiver to associate a correct transmission antenna specific channel coefficient with each transmitted symbol by starting the transmission pattern from the beginning in the beginning of each frame.

In response, the examiner respectfully disagrees. Regarding the limitation (a), Hosur clearly teaches that the pilot symbol 11 is transmitted on antenna 1 (col. 4, lines 49-63). Note

that the claim does not exclude a situation where more than one antenna is transmitted at a time. Therefore, the limitation starting the transmission of the sequence of symbols (the pilot symbol 11) from a predefined antenna (antenna 1) is clearly met.

Regarding the limitation (b), as shown in equations [5]-[10], Hosur teaches that the channel estimates α_j^1 and α_j^2 are associated with the received signals R_j^1 - R_j^4 comprising the corresponding symbols transmitted from associated antennas 1 and 2 transmitted from the beginning of each frame, i.e., time slot 1 as shown in a pattern of TABLE 1, col. 3, lines 2-65; see also col. 4, lines 35-37. Specifically, Hosur teaches that the channel estimates α_j^1 and α_j^2 corresponding to the first and second antennas are derived from the received signals R_j^1 and R_j^3 as shown in equations [9] and [10] (col. 5, lines 36-39), and R_j^1 and R_j^3 are produced by pilot symbols (B_1, B_1) and (B_2, $-B_2$), respectively (col. 5, lines 29-36). In addition, equations [6] and [8] show that each received signal R_j^2 and R_j^4 has a value determined by the transmitted pilot symbols B_1, S_1, B_2, S_2, B_1, $-S_2$*, $-B_2$, and s_1* (col. 5, lines 56-58). Therefore, the limitation enabling a receiver to associate a correct transmission antenna specific channel coefficient with each transmitted symbol (the channel estimate α_j^1 with symbols B1, B2, S_1, and S_2 and the channel estimate α_j^2 with symbols B1, -B2,

$-S_2^*$ and S_1^*) by starting the transmission pattern from the beginning in the beginning of each frame (time slot 1 as shown in a pattern of TABLE 1) is met.

Accordingly, the rejection is maintained.

Conclusion

10. THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to NITTAYA JUNTIMA whose telephone number is (571)272-3120. The examiner can normally be reached on Monday through Friday, 8:00 A.M - 5:00 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Seema Rao can be reached on 571.272.3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you

have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Seema S. Rao/
Supervisory Patent Examiner, Art Unit 2416

/Nittaya Juntima/
Examiner, Art Unit 2416
5/23/2009